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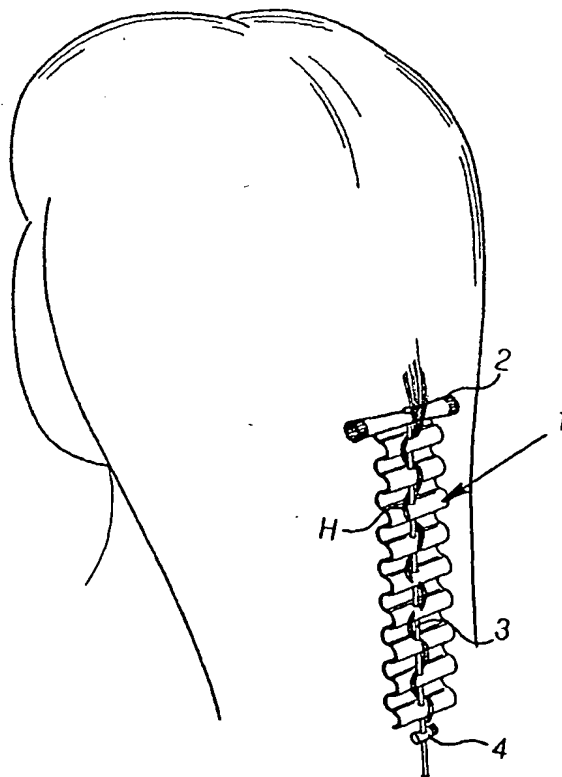
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(54) Title: HAIR SETTING IMPLEMENT AND HAIR SETTING APPARATUS HAVING SUCH IMPLEMENT

(57) Abstract

A hair setting implement, used for setting desired permanent wave into the hair, is disclosed. This implement (100) is designed to allow a skilled or unskilled user to more easily and simply set a variety of desired waves and/or curls into the hair while freely changing the combination and arrangement of the curls and waves as desired in addition to free control for the wave pitch. This implement (100) has a longitudinal flexible plate (1), with both a support member (2) provided at a top end of the plate (1) and a plurality of holes (1a) regularly formed on the plate (1) while being arranged along at least one longitudinal straight line. A cable (3) is fixed to the support member (2) at one end thereof and completely and movably passes through all the holes (1a) from the uppermost to lowermost holes (1a), thus forming a corrugated formation of the flexible plate (1). The corrugated formation of the plate (1) consists of alternately arranged ridges (1b) and valleys (1c). A stopper (4) is movably fitted over the other end of the cable (3) and is selectively clamped to a position of the cable (3) by a clamping unit, thus maintaining the corrugated formation of the flexible plate (1). The invention also provides a hair setting apparatus, having such an implement (100) and a control box (200). The control box (200) has a plug (70) and a timer (8).



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HAIR SETTING IMPLEMENT AND HAIR SETTING APPARATUS HAVING SUCH IMPLEMENT

Technical Field

5 The present invention relates, in general, to a hair setting implement used for setting desired permanent wave into the hair and a hair setting apparatus having such an implement and, more particularly, to a structural improvement in such a hair setting implement to allow a
10 user to more easily and simply set a variety of desired waves and/or curls into the hair while freely changing the wave pitch.

Background Art

As well known to those skilled in the art, several
15 types of hair setting and styling implements, such as hollow cylindrical hair rollers and wave clips designed to set desired permanent waves into the hair, have been proposed.

Fig. 1 shows a hair setting technique of forming a
20 hair style using a conventional hair roller.

As shown in the drawing, the conventional hair roller
10, used for setting a permanent wave into the hair, consists of a longitudinal slim cylindrical body, with a plurality of hook projections 11 formed at each end
25 thereof and used for holding rubber loops on the body. The process of setting a permanent wave into the hair using such hair rollers 10 is performed as follows.

A hair setting liquid is sprayed onto the hair H
prior to placing a hair roller 10 at the free ends of the
30 hair. The hair H is, thereafter, rolled up while being wound around the roller 10. The rolled state of the hair around the roller 10 is kept for a predetermined lengthy period of time using one or more rubber loops 12 held on the hook projections 11 formed at opposite ends of the
35 roller 10. Therefore, the rolled shape of the hair H is set by the action of the hair setting liquid. After the lapse of the predetermined lengthy period of time from

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the fixing of the hair on the roller 10, the rubber loops 12 are removed from the roller 10 prior to removing the roller 10 from the hair H. A curl is thus completely set into the hair H by such rollers 10, thus forming a
5 desired permanent wave. In the above hair setting process, it is necessary to appropriately tension the hair H while rolling the hair upwardly and fixing the hair around the roller 10, thus allowing the curled shape of the hair to be elastically maintained for a desired
10 number of months.

However, the hair setting and styling technique using such hair rollers 10 is problematic in that the shape of the curl set into the hair by the rollers 10 is undesirably limited by the fixed shape of the rollers 10.
15 This finally prevents users of such rollers 10 from setting a variety of hair styles. In addition, there may be a slight difference in tensile force applied to the hair H while rolling the hair around the roller 10. In such a case, the finally curled shapes of the hair H may
20 fail to be uniform. It is thus almost impossible for unskilled users to set desired curls into the hair using such hair rollers 10. The hair style formed by the rollers 10 is limited.

Fig. 2 shows a hair setting technique of forming a
25 hair style using a conventional wave clip.

As shown in the drawing, the conventional wave clip 20, used for setting a permanent wave into the hair, consists of a rectangular base plate 22 having a plurality of regularly-spaced rectangular bosses 23. A
30 cover plate 24, having a plurality of rectangular depressions 25 at positions corresponding to the bosses 23, is integrated with the base plate 22 so as to be selectively closed onto the base plate 22. When the two plates 22 and 24 are closed to each other, the bosses 23
35 are closely fitted into the depressions 25, thus accomplishing an engagement of the two plates 22 and 24. The process of setting a permanent wave into the hair using such wave clips 20 is performed as follows.

A hair setting liquid is sprayed onto the hair H
40 prior to placing the hair on the base plate 22 of a clip

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20. Thereafter, the cover plate 24 engages with the base plate 22, with the bosses 23 closely fitted into the depressions 25 while jamming the hair between them. The jammed state of the hair between the bosses 23 and the depressions 25 is kept for a predetermined lengthy period of time, and so the jammed shape of the hair H is set by the action of the hair setting liquid. After the lapse of the predetermined lengthy period of time, the clip 20 is removed from the roller 10 by separating the cover plate 24 from the base plate 22. In such a case, such wave clips 20 set a wave into the hair H.

However, the hair setting and styling technique using such wave clips 20 is problematic in that the hair style formed by the clips 20 is undesirably limited to a simple wave due to the fixed shape of the clips 20. This finally prevents users of such wave clips 20 from setting a variety of hair styles.

In order to set both curl and wave into the hair using conventional hair setting implements, it is necessary for a user to use both the hair rollers 10 and the wave clips 20 at the same time. However, it is very difficult to set desired curl and wave into the hair using both the rollers 10 and the clips 20 at the same time.

In an effort to overcome the problems experienced in such conventional hair setting implements, another type of hair setting and styling technique has been proposed and used. However, this hair setting and styling technique is also problematic as follows.

Korean Patent Laid-open Publication No. 84-6288 discloses "a method of setting permanent wave into the hair". In the above Korean method, a plurality of curved hard plate pairs, individually having a plurality of embossments and depressions alternately formed at regular intervals with the same radius of curvature, are used. However, it is impossible to change the curved profile of the plate pairs, used in the above Korean method, as desired, and so the hair style formed by the curved plate pairs is undesirably limited to a simple style due to the fixed profile of the plate pairs. This finally prevents

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users of such curved plate pairs from setting a variety of hair styles. In addition, it is necessary for the users of the above Korean plate pairs to lock the two curved plates of each plate pair together using a hair roller with a rubber loop. It is thus very difficult to set desired permanent wave into the hair using the above Korean curved plate pairs in the same manner as that described for the above-mentioned hair rollers 10 and wave clips 20.

On the other hand, Japanese U.M. Laid-open Publication No. Sho. 62-10801 discloses "an implement for setting a permanent wave into the hair". Japanese U.M. Laid-open Publication No. Sho. 62-13402 discloses "a permanent wave setting implement". However, the above Japanese implements use a plurality of curved hard plate pairs, elastic plates and/or hair rollers, and so they have the same problems as that described for the above method disclosed in Korean Patent Laid-open Publication No. 84-6288. Other examples of conventional hair setting techniques may be referred to Japanese U.M. Laid-open Publication No. Sho. 62-109001 and Japanese Patent Laid-open Publication Nos. Heisei. 2-63407 and Heisei. 7-289341. However, those Japanese techniques are problematic in that they fail to overcome the above-mentioned problems.

Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a hair setting implement, which is used for setting desired permanent wave into the hair and is particularly designed to allow a skilled or unskilled user to more easily and simply set a variety of desired waves and/or curls into the hair while freely changing the combination and arrangement of the curls and waves as desired in addition to free control for the wave pitch.

Another object of the present invention is to provide a hair setting apparatus having such an implement.

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In order to accomplish the above objects, the present invention provides a hair setting implement, comprising: a longitudinal flexible plate, with both a support member provided at a top end of the plate and a plurality of
5 holes regularly formed on the plate while being arranged along at least one longitudinal straight line; a cable fixed to the support member at its first end and completely and movably passing through all the holes of the flexible plate from an uppermost hole to a lowermost
10 hole, thus forming a corrugated formation of the flexible plate, with the corrugated formation consisting of alternately arranged ridges and valleys; and a stopper movably fitted over a second end of the cable and selectively clamped to a position of the cable by a
15 clamping unit, thus maintaining the corrugated formation of the flexible plate without allowing the corrugated formation to be undesirably loosened.

In the above hair setting implement, the holes of the flexible plate may be formed along two or more
20 straight lines, with two or more cables individually passing through the holes arranged along each of the straight lines. In addition, a plurality of curling projections may be provided at central portions of the ridges of the flexible plate.

25 The present invention also provides a hair setting apparatus, comprising: a hair setting implement consisting of: a longitudinal flexible plate, with both a support member provided at a top end of the plate and a plurality of holes regularly formed on the plate while being
30 arranged along at least one longitudinal straight line; a cable having a heating coil therein, the cable being fixed to the support member at its first end and completely and movably passing through all the holes of the flexible plate from an uppermost hole to a lowermost
35 hole, thus forming a corrugated formation of the flexible plate, with the corrugated formation consisting of alternately arranged ridges and valleys, the cable also having a jack at its second end so as to supply electric power to the heating coil; and a stopper movably fitted
40 over the second end of the cable and selectively clamped

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to a position of the cable by a clamping unit, thus maintaining the corrugated formation of the flexible plate without allowing the corrugated formation to be undesirably loosened; and a control box consisting of: a
5 plug selectively and removably connected to the jack of the cable so as to supply electric power to the heating coil of the cable; and a timer used for counting a power supply time so as to stop power supply for the cable at an end of a predetermined power supply time.

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Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken
15 in conjunction with the accompanying drawings, in which:

Fig. 1 shows a hair setting technique of forming a hair style using a conventional hair roller;

Fig. 2 shows a hair setting technique of forming a hair style using a conventional wave clip;

20 Fig. 3 is a perspective view of a hair setting implement in accordance with the primary embodiment of the present invention;

Fig. 4 shows a hair setting technique of forming a hair style using the hair setting implement of Fig. 3;

25 Fig. 5 is an enlarged front view of the hair setting implement of Fig. 4;

Fig. 6 is an enlarged front view of the hair setting implement of Fig. 3 when the implement is used for forming another hair style;

30 Fig. 7 is an enlarged front view of the hair setting implement of Fig. 3 when the implement is used for forming a further hair style;

Fig. 8 is a perspective view of a hair setting implement in accordance with the second embodiment of the
35 present invention;

Fig. 9 is a sectional view of the hair setting implement of the second embodiment taken along the line IX-IX of Fig. 8;

Fig. 10 shows a hair setting technique of forming a

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hair style using the hair setting implement of Fig. 8;

Fig. 11 is an enlarged front view of the hair setting implement of Fig. 10;

Fig. 12 is an enlarged front view of the hair setting implement of Fig. 8 when the implement is used for forming another hair style;

Fig. 13 is an enlarged front view of the hair setting implement of Fig. 8 when the implement is used for forming a further hair style;

Fig. 14 is a perspective view of a hair setting apparatus in accordance with the present invention; and

Fig. 15 is a sectional view, showing a heating cable connection structure included in the hair setting apparatus of Fig. 14.

Best Mode for Carrying Out the Invention

Fig. 3 is a perspective view of a hair setting implement in accordance with the primary embodiment of this invention. Fig. 4 shows a hair setting technique of forming a hair style using the hair setting implement of Fig. 3.

As shown in the drawings, the hair setting implement 100 according to the primary embodiment of this invention comprises a longitudinal flexible plate 1, which is regularly and transversely corrugated. A cable 3 longitudinally pierces the corrugations of the flexible plate 1, while a stopper 4 is movably fitted over the lower end portion of the cable 3. The above three elements 1, 3 and 4 of the hair setting implement 100 have the following constructions and operational functions.

First, the flexible plate 1 consists of a transversely corrugated thin plate body made of a flexible material, with a hair roller-shaped support member 2 being fixed at the top end of the plate body and a plurality of holes 1a being regularly formed on the opposite sidewalls of the corrugations while being arranged along a longitudinal straight line. The corrugated formation of the flexible plate 1, consisting of ridges 1b and valleys

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1c, is adjustable and maintained by the cable 3 passing through the holes 1a of the flexible plate 1, with the length of the cable 3 relative to the plate 1 being adjustable by the stopper 4. That is, the corrugated formation or the wave pitch of the flexible plate 1 is freely adjustable and maintained by the cable 3 cooperating with the stopper 4. It is preferable to form a dam 1d (see Fig. 9) along each longitudinal edge of the flexible plate 1 so as to prevent a hair setting liquid from undesirably flowing out of the plate 1. The above corrugated flexible plate 1 is used for waving the hair, which is set along the corrugated surface of the plate 1.

The cable 3 is a small diameter string, which completely and movably passes through all the holes 1a of the flexible plate 1 from the uppermost hole to the lowermost hole, thus maintaining a desired corrugated formation of the flexible plate 1. The above cable 3 is fixed to the center of the support member 2 of the plate 1 at its top end, with the stopper 4 being movably fitted over the lower end portion of the cable 3. The cable 3 forms desired gaps at the valleys 1c between the ridges 1b of the corrugated plate 1 and holds the hair H jammed at the gaps without allowing the hair to be undesirably movable relative to the corrugated plate 1. The cable 3 also sets curls into the hair when the hair is repeatedly coiled around the cable 3. When the holes 1a of the flexible plate 1 are formed along two or more straight lines, it may be possible to use two or more cables 3 individually passing through the holes 1 arranged along each straight line.

The stopper 4 may have the same construction as that of a conventional stopper used with a tying cable installed at the mouth of a knapsack or a grain bag. That is, the stopper 4 comprises a stationary piece 4a and a pressure piece 4b. The pressure piece 4b is movably assembled with the stationary piece 4a, with a spring (not shown) being interposed between the two pieces 4a and 4b and normally biasing the pressure piece 4b in a direction relative to the stationary piece 4a. When the pressure piece 4b is pressed by a finger relative to

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the stationary piece 4a, the stopper 4 is allowed to be movable along the cable 3. When the pressure piece 4b is released from the finger force after completely moving the stopper to a desired position on the cable 3, the pressure piece 4b clamps the cable 3 by the restoring force of the spring, thus allowing the stopper 3 to be clamped at the desired position on the cable 3. When the stopper 4 is moved along the cable 3 to a desired position and is firmly clamped at the position by the spring-biased pressure piece 4b, the stopper 3 keeps a corrugated formation of the flexible plate 1 without allowing said corrugated formation to be undesirably changed. Therefore, it is possible to somewhat freely adjust the wave pitch P of the corrugated flexible plate 1 by controlling the position of the stopper 4 on the cable 3. This finally allows a user to easily and simply change the wave size of the flexible plate 1 as desired.

The process of setting a desired permanent wave into the hair using the above hair setting implement 100 is performed as follows.

The corrugated flexible plate 1 is somewhat sufficiently spread out, and a hair setting liquid is sprayed onto the hair H, thus accomplishing a preparation step. Thereafter, the hair H is held on the support member 2 prior to passing over the uppermost ridge 1b of the plate 1 while being appropriately tensioned by a user. The hair H from the uppermost ridge 1b passes in back of the cable 3 positioned within the uppermost valley 1c, thus being primarily held on the cable 3. The above-mentioned steps of passing over the ridge 1b and of passing in back of the cable 3 within the valley 1c is repeated from the upper end to a desired lower portion of the plate 1, thus holding the hair H on the cable 3 as shown in Fig. 4. Thereafter, the position of the stopper 4 on the cable 3 is appropriately adjusted so as to tighten the corrugations of the plate 1. In such a case, the lower end of the cable 3 is held by one hand, while the stopper 4 is held by the other hand. After completely moving the stopper 4 to a desired position on the cable 3, the stopper 4 is released from the finger

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force, and so the stopper 4 clamps the cable 3 by the restoring force of the spring installed within the stopper 4. The adjusted position of the stopper 4 on the cable 3 is thus fixed and keeps the corrugated formation of the flexible plate 1. After the lapse of a predetermined lengthy period of time from the fixing of the hair on the implement, a neutralizing agent is sprayed onto the hair H prior to removing the hair setting implement 100 from the hair H with the stopper 4 released from the cable 3. A desired wave, formed by the corrugations of the flexible plate 1, is completely set into the hair H. In the above process, the flexible plate 1 is effectively held by the support member 2, and so the preset wave pitch P of the plate 1 is free from being distorted at both sides of the plate 1 around the cable 3.

During the above-mentioned hair setting process using the implement 100 of this invention, the wave of the hair H is set while being somewhat strongly compressed by the ridges 1b of the corrugations. This finally allows the wave set into the hair H to be effectively maintained for a desired number of months without being easily loosened. In addition, the setting of the implement 100 into the hair H is easily and simply accomplished by tightening and closing the corrugations of the flexible plate 1 by controlling the stopper 4 after allowing the hair H to repeatedly and continuously pass in back of the cable 3 within the valleys 1c of the plate 1. Therefore, it is possible for a skilled or unskilled user to easily and simply set a desired wave into the hair using the implement 100.

In addition, the wave pitch P and wave size of the plate 1 are adjustable as desired by controlling the position of the stopper 4 on the cable 3. The above implement 100 is also used for setting a curl into the hair H. Therefore, it is possible to set a variety of permanent waves into the hair H using such an implement 100. That is, when the hair H is set on the implement 100 in a way such that it continuously passes in back of the cable 3 within the valleys 1c of the corrugated plate 1 from the uppermost valley to the lowermost valley while

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alternately changing its passing direction and forming a zigzag passage as shown in Figs. 4 and 5, it is possible to set a permanent wave, consisting of large waves having the same wave pitch P as that of the corrugated plate 1, into the hair H . On the other hand, when the hair H is set on the implement 100 in a way such that it continuously passes in back of the cable 3 within the valleys 1c in one direction while forming a zigzag passage as shown in Fig. 6, it is possible to set a permanent wave, consisting of small waves, into the hair H . In addition, when the hair H is set on the implement 100 in a way such that it continuously passes over the ridges 1b and passes in back of the cable 3 within the valleys 1c while forming a coiled passage as shown in Fig. 7, it is possible to set a permanent wave, consisting of alternate waves and curls, into the hair H .

The hair setting implement 100 of the primary embodiment allows a skilled or unskilled user to easily and simply set a desired permanent wave into the hair. This implement 100 also sets a strong permanent wave, which is effectively maintained for a desired number of months without being easily loosened. Another advantage of this implement 100 resides in that it is also possible to freely change the arrangement of waves and curls in a resulting permanent wave as desired in addition to a free change of wave pitch. Therefore, this implement 100 allows a user to freely form a variety of hair styles as desired.

Figs. 8 and 9 are views of a hair setting implement in accordance with the second embodiment of this invention.

As shown in the drawings, the hair setting implement 100 according to the second embodiment of this invention comprises a longitudinal flexible plate 1, which is regularly and transversely corrugated. A cable 3 longitudinally pierces the corrugations of the flexible plate 1, while a stopper 4 is movably fitted over the lower end portion of the cable 3. The implement 100 of this second embodiment further comprises a plurality of curling projections 5, each of which is provided at the

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central portion of each even number ridge 1b, with the ridges 1b being referred to uneven number ridges and even number ridges when they are counted in a direction from the uppermost ridge to the lowermost ridge.

5 The above curling projections 5 are used for setting curl, or circular wave, into the hair H. Each of the projections 5 comprises a shank and a disc-shaped head, with the head effectively holding the hair H coiled around the shank of each projection 5.

10 The process of setting a desired permanent wave into the hair using the hair setting implement 100 of the second embodiment is performed as follows.

15 When the hair H is set on the implement 100 by being held on both the corrugations of the plate 1 and the cable 3 without being held on the projections 5 as shown in Figs. 10 and 11, it is possible to set waves, having the same appearance as that of the corrugations of the plate 1, and curls, formed by the cable 3, into the hair H.

20 On the other hand, when the hair H is set on the implement 100 by being held on the cable 3 within the valleys 1c of the plate 1 and being coiled around the projections 5, it is possible to set a hair style, consisting of large waves, having the same wave pitch as that of the corrugated plate 1, first type of curls, formed by the cable 3, and second type of curls, formed by the projections, into the hair H. Therefore, this implement 100 of the second embodiment can be more effectively used for forming a variety of hair styles in comparison with the implement of the primary embodiment.

30 That is, when the hair H is set on the implement 100 of this embodiment by being held on the cable 3 within each valley 1c of the plate 1 and being coiled around each projection 5 as shown in Fig. 12, it is possible to set a diversified hair style, consisting of alternately arranged large waves and curls, into the hair H. On the other hand, when the hair H is set on the implement 100 of this embodiment by being held on the cable 3 within each valley 1c and being coiled around the even number projections 5 as shown in Fig. 13, it is possible to set

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another diversified hair style, consisting of alternately arranged two large waves and one curl, into the hair H.

In addition, when the hair H is set on the implement 100 of this second embodiment by being held on only the projections 5, it is possible to set a hair style, consisting of curls, into the hair H. When the hair H is set on the implement 100 by being repeatedly held on two projections 5 at the same time, it is possible to set a hair style, consisting of curls and straight hairs, into the hair H. On the other hand, when the hair H is set on the implement 100 by passing in back of the cable after passing over two or more ridges 1b of the plate 1, it is possible to set a hair style, consisting of enlarged waves, into the hair H.

The hair setting implement 100 of the second embodiment is advantageous in that it allows a free change of the arrangement of waves and curls in a resulting permanent wave in addition to a free change of wave pitch. This implement 100 thus allows a user to freely form a variety of hair styles as desired.

Fig. 14 is a perspective view of a hair setting apparatus in accordance with the present invention. As shown in the drawing, the hair setting apparatus of this invention comprises a hair setting implement 100, a heating cable 6 and a control box 200. The heating cable 6 heats the hair H set on the implement 100. The control box 200 supplies electric power to the cable 6 while controlling the operation of the cable 6.

In the apparatus, the above heating cable 6 in place of the above-mentioned cable 3 is used with the corrugated flexible plate 1. This cable 6 has heating coils 63 in addition to a jack 60 provided at the end thereof. The above jack 60 connects the coils 63 to the control box 200 so as to supply electric power to the coils 63.

The control box 200 comprises a main body, which is provided with a plurality of plugs 70 and is covered with a cover 9. The above plugs 70 are selectively connected to the jack 60 of the cable 6 so as to supply electric power to the coils 63 of the cable 6. The control box

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200 also has a timer 8, which automatically counts the power supply time and stops the power supply for the cable 6 at the end of a predetermined supply time. A plurality of cells 200a are formed on the top of the main body of the control box 200 so as to receive the implement 100 and the cable 6 in the control box 200. The cover 9 is hinged to the main body of the control box 200 and closes the top portion of the body. In the present invention, it is preferable to design the timer 8 to give a power switch function in addition to the above-mentioned time counting function to the timer 8.

As shown in Fig. 15, each of the plugs 70 comprises a tubular member 71, which is projected from the top surface of the main body of the box 200 while forming an insert hole 71a therein. Upper and lower annular terminals 72 are installed in the insert hole 71a at upper and lower positions while being spaced apart from each other and being projected radially and inwardly in the hole 71a, with a power cord 73 being connected to each annular terminal 72. On the other hand, the jack 60 comprises a rod-shaped terminal 61 concentrically surrounded by a cover member 62, with an annular gap being defined between the terminal 61 and the cover member 62. The rod-shaped terminal 61 comprises a core 61a, to which one of the heating coils 63 of the cable 6 is connected. The above core 61a is tightly covered with an external sheath 61b. The above sheath 61b is insulated from the core 61a and is connected to the other coil 63 of the cable 6. The above cover member 62 has an elliptical cross-section and is preferable to be laterally corrugated on its external surface. In addition, it is preferable to allow the end of the core 61a to be slightly projected from the distal end of the sheath 61b to a length.

In an operation of the hair setting apparatus of this invention, the jack 60 of the cable 6 removably engages with one plug 70 of the control box 200 as shown in Fig. 15. In such a case, the rod-shaped terminal 61 is fully inserted into the hole 71a of the tubular member 71 of the plug 70, with the distal end of the core 61a

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coming into contact with the lower annular terminal 72 and the external sheath 61b being brought into contact with the upper annular terminal 72 of the plug 70. The two heating coils 63 of the cable 6 are connected to the two power cords 73 of the control box 200.

In the operation of the above hair setting apparatus, the heating coils 63 are activated to appropriately heat the hair H set on the hair setting implement 100. This hair setting apparatus is thus effectively used for setting weak waves and/or curls into the hair H or for setting strong waves and/or curls into the hair H as desired.

In the above apparatus, the heating cable 6 is activated within a predetermined time under the control of the timer 8, and so the apparatus allows a user to do another work while using the implement 100. In addition, the implement 100 is removably connected to the control box 200 using both the jack 60 and the plug 70, it is thus possible for a user to use only the implement 100 after separating the implement 100 from the control box 200. In a permanent wave setting operation of the apparatus of this invention, a hair setting liquid may flow down along the cable 6 from the hair H. However, since the jack 60 and the plug 70 are commonly protected by the cover member 62, the hair setting liquid is almost completely prevented from reaching the contact junction between the jack 60 and the plug 70. It is thus possible to protect the hair setting apparatus from an unexpected short-circuit during an operation of the apparatus.

When the hair setting apparatus is not used, the main body of the control box 200 is covered with the cover 9, with the implement 100 and the cable 6 being received within the cells 200a of the box 200. This finally allows a user to keep the apparatus cleanly and neatly.

Industrial Applicability

As described above, the present invention provides a hair setting implement used for setting desired

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permanent wave into the hair and a hair setting apparatus having such an implement. The implement is designed to allow a skilled or unskilled user to more easily and simply set a variety of desired waves and/or curls into the hair while freely changing the combination and arrangement of the curls and waves as desired in addition to free control for the wave pitch. This implement thus allows users to easily and simply set a variety of permanent waves into the hair at home as desired. In the hair setting apparatus of this invention, the activated heating coils 63 appropriately heat the hair H set on the hair setting implement 100. This hair setting apparatus is thus effectively used for setting weak waves and/or curls into the hair H or for setting strong waves and/or curls into the hair H as desired.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

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Claims:

1. A hair setting implement, comprising:
a longitudinal flexible plate, with both a support member provided at a top end of the plate and a plurality
5 of holes regularly formed on the plate while being arranged along at least one longitudinal straight line;
a cable fixed to said support member at its first end and completely and movably passing through all the
10 holes of the flexible plate from an uppermost hole to a lowermost hole, thus forming a corrugated formation of said flexible plate, with the corrugated formation consisting of alternately arranged ridges and valleys; and
15 a stopper movably fitted over a second end of said cable and selectively clamped to a position of said cable by a clamping unit, thus maintaining the corrugated formation of said flexible plate without allowing the corrugated formation to be undesirably loosened.
2. The hair setting implement according to claim 1, wherein said holes of the flexible plate are formed along
20 two or more straight lines, with two or more cables individually passing through the holes arranged along each of the straight lines.
3. The hair setting implement according to claim 1, further comprising:
25 a plurality of curling projections provided at central portions of said ridges of the flexible plate.
4. The hair setting implement according to claim 3, wherein said curling projections are individually provided at the central portion of each of even number or uneven
30 number ridges of the flexible plate, with the ridges being referred to uneven number ridges and even number ridges when they are counted in a direction from the uppermost ridge to the lowermost ridge.
5. The hair setting implement according to any one
35 of claims 1 to 4, wherein a dam is formed along each of

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opposite longitudinal edges of said flexible plate so as to prevent a hair setting liquid from undesirably flowing out of the flexible plate during a hair setting process.

6. A hair setting apparatus, comprising:

5 a hair setting implement consisting of:

a longitudinal flexible plate, with both a support member provided at a top end of the plate and a plurality of holes regularly formed on the plate while being arranged along at least one longitudinal straight
10 line;

a cable having a heating coil therein, said cable being fixed to said support member at its first end and completely and movably passing through all the holes of the flexible plate from an uppermost hole to a
15 lowermost hole, thus forming a corrugated formation of said flexible plate, with the corrugated formation consisting of alternately arranged ridges and valleys, said cable also having a jack at its second end so as to supply electric power to the heating coil; and

20 a stopper movably fitted over the second end of said cable and selectively clamped to a position of said cable by a clamping unit, thus maintaining the corrugated formation of said flexible plate without allowing the corrugated formation to be undesirably loosened; and

25 a control box consisting of:

a plug selectively and removably connected to said jack of the cable so as to supply electric power to the heating coil of the cable; and

30 a timer used for counting a power supply time so as to stop power supply for said cable at an end of a predetermined power supply time.

7. The hair setting apparatus according to claim 6, wherein

said plug consists of:

35 a tubular member set on the control box while being projected from a top surface of the control box to a height while forming an insert hole therein; and
upper and lower annular terminals installed in

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said insert hole of the tubular member at upper and lower positions while being spaced apart from each other and being projected radially inwardly in said insert hole, with plus and minus power cords being respectively
5 connected to said upper and lower annular terminals;

said jack consists of:

a rod-shaped terminal having a core covered with an external sheath, said core and said external sheath being brought into contact with the lower and upper
10 annular terminals of the plug when the jack engages with the plug; and

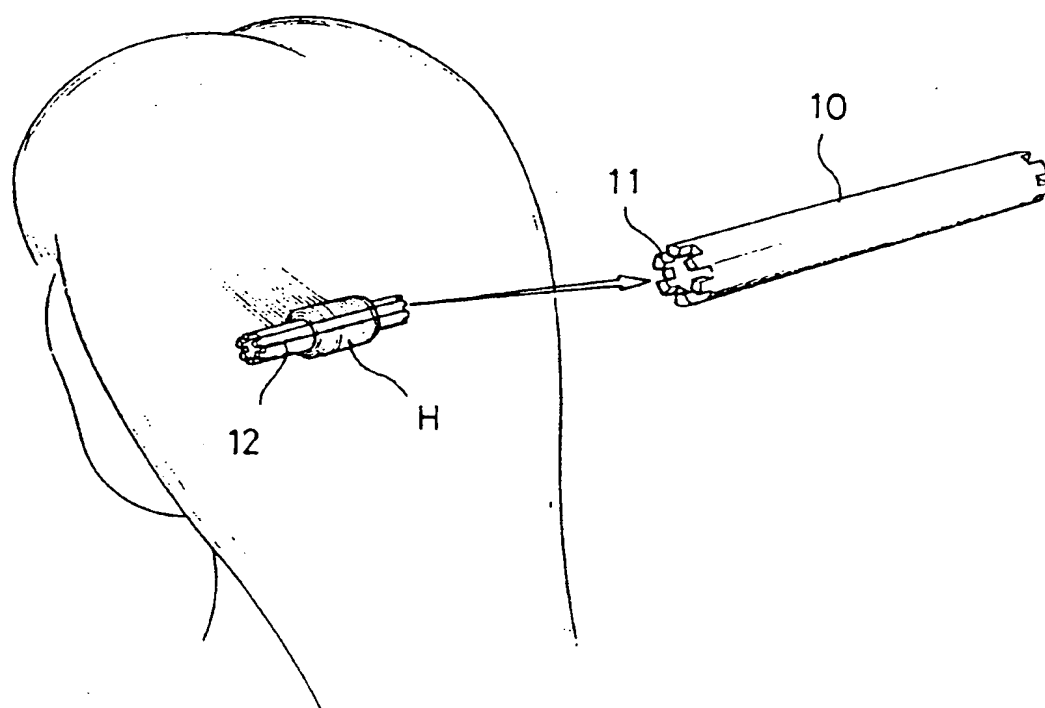
a cover member concentrically surrounding the rod-shaped terminal, with an annular gap being defined between the rod-shaped terminal and the cover member, said
15 cover member protecting the tubular member when the jack engages with the plug.

8. The hair setting apparatus according to claim 6, wherein said control box further comprises:

a cell used for receiving the hair setting implement
20 and said cable in the control box; and

a cover used for covering the control box so as to protect the plug.

Fig. 1



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Fig. 2

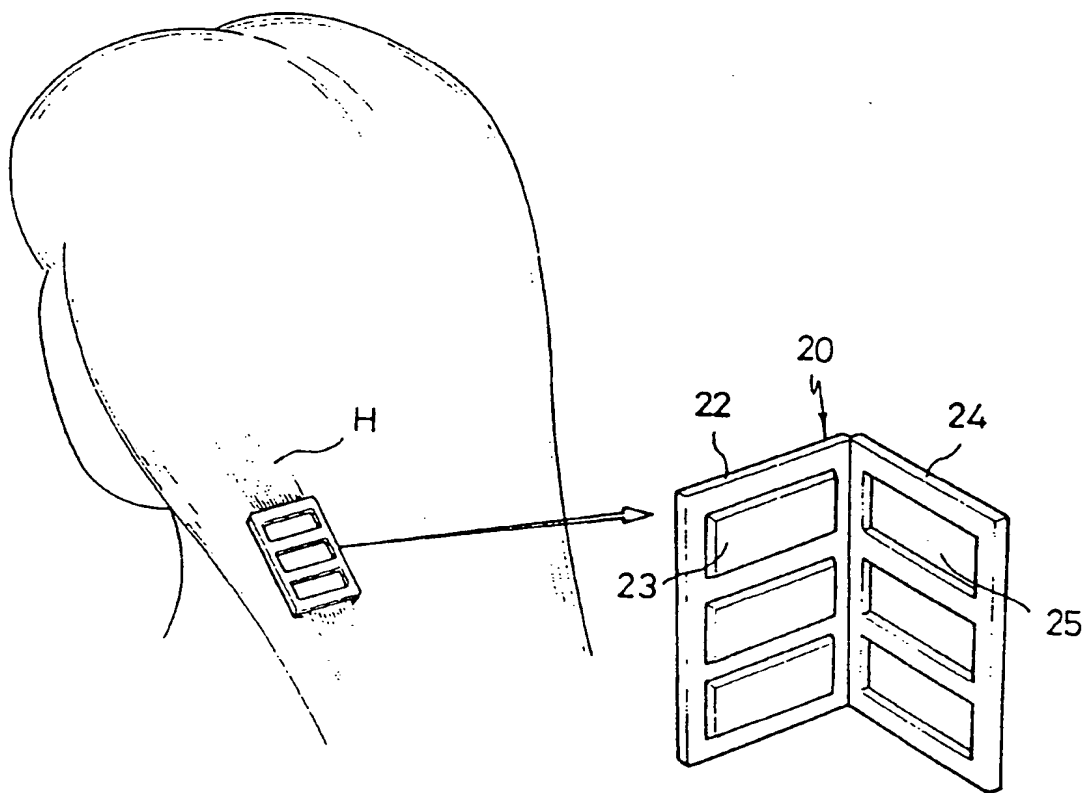


Fig. 3

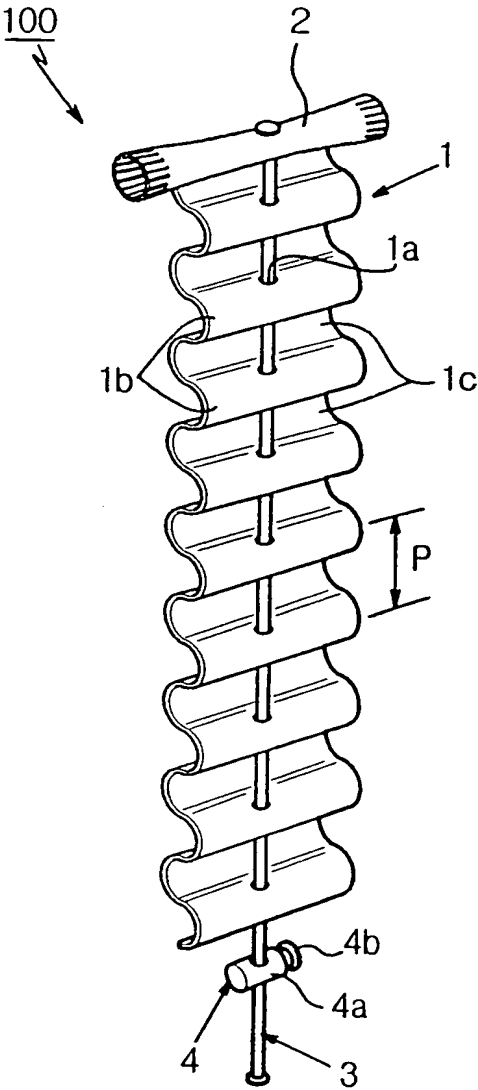
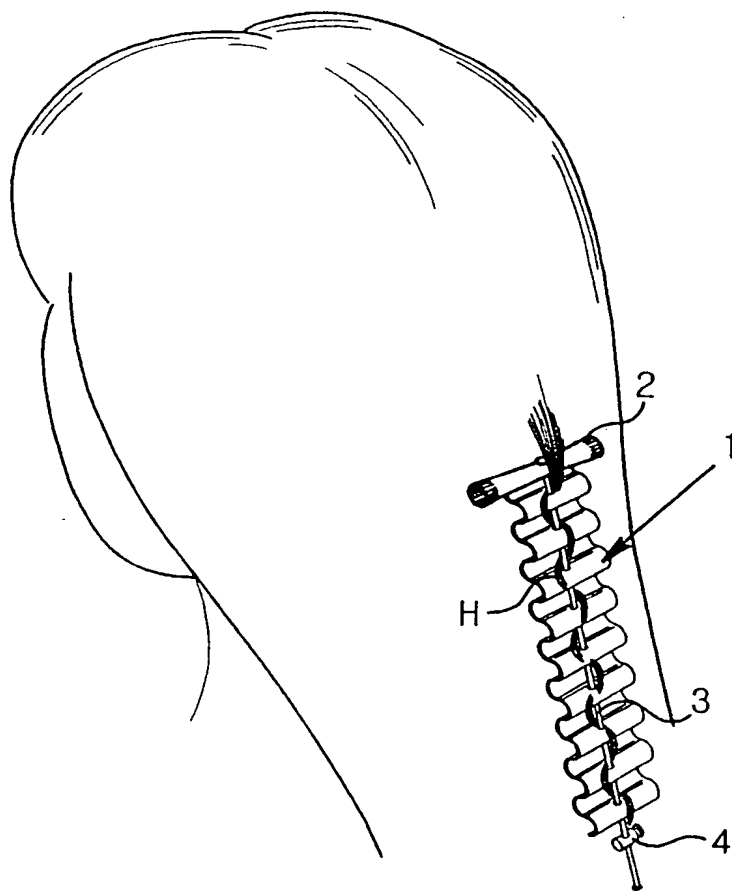
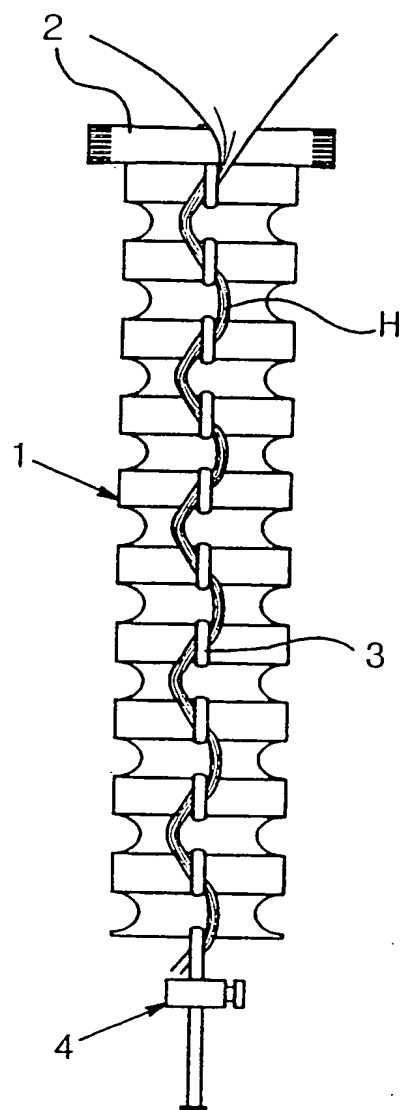


Fig. 4



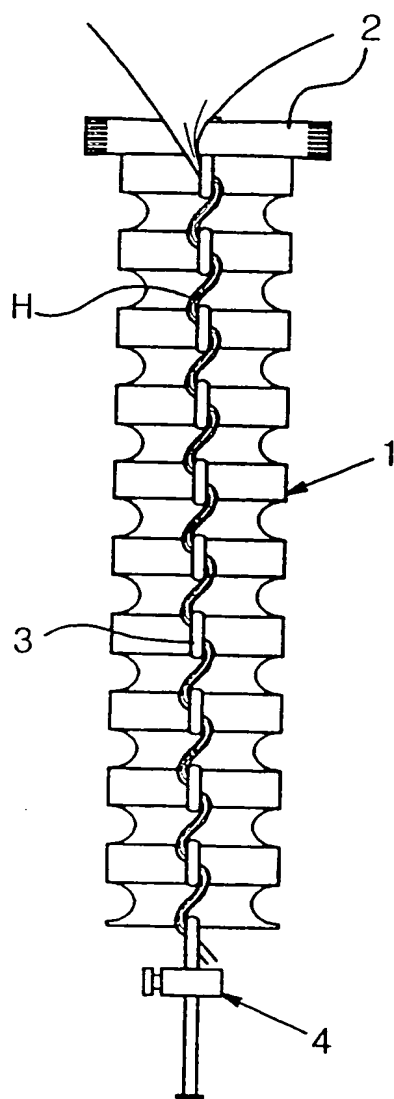
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Fig. 5



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Fig. 6



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Fig. 7

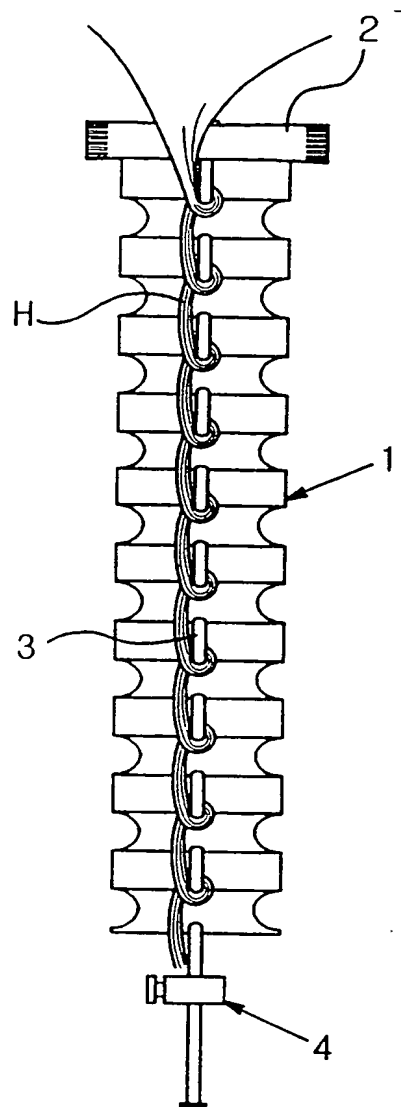
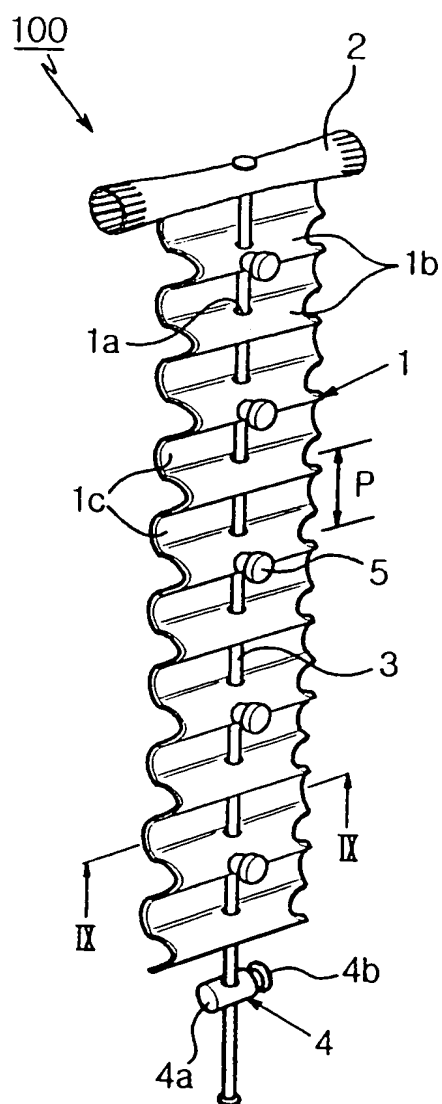


Fig. 8



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Fig. 9

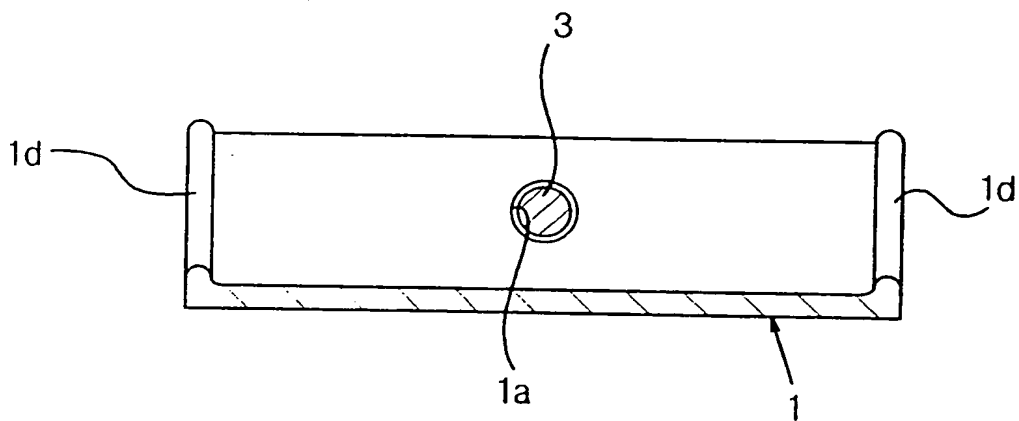
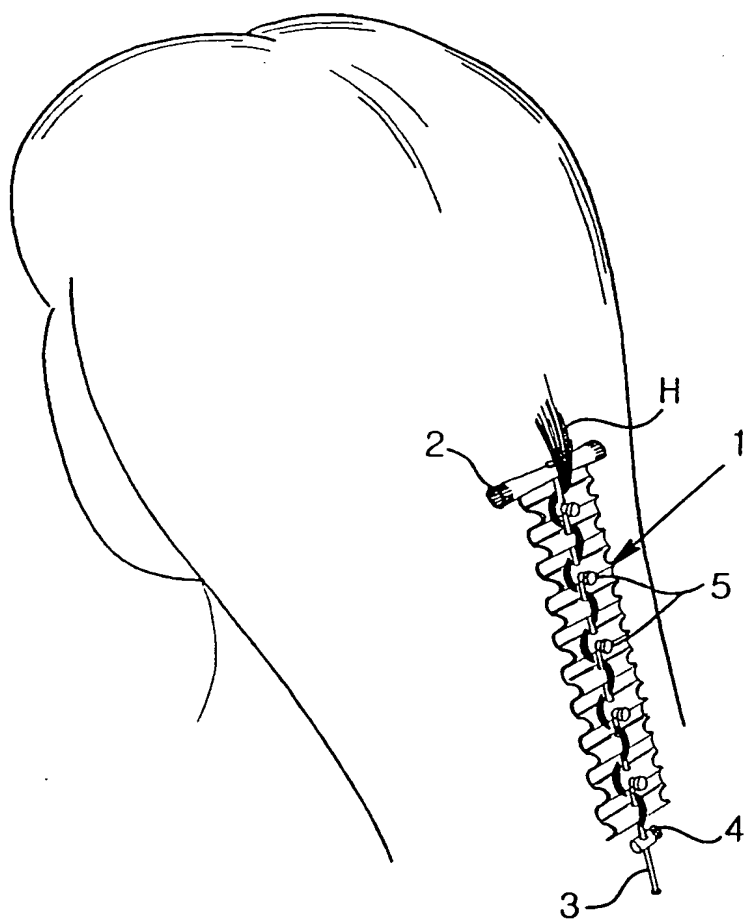
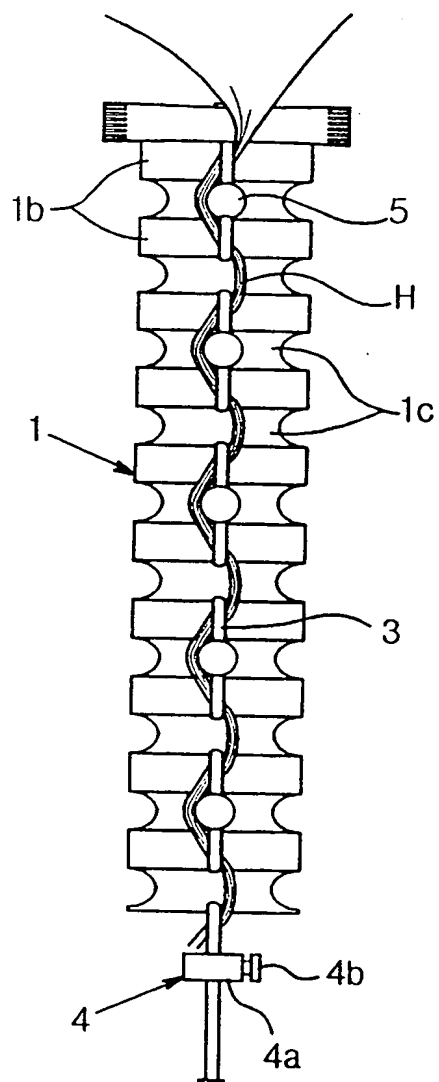


Fig. 10



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Fig. 11



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Fig. 12

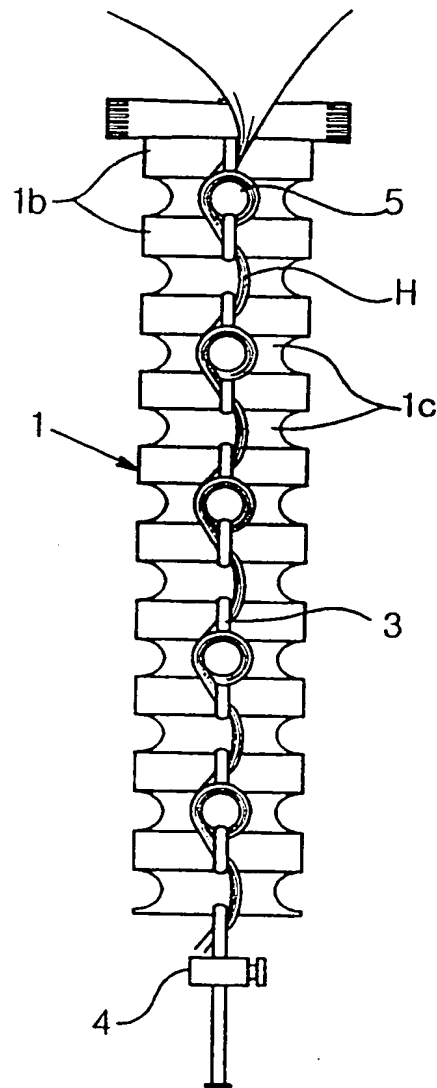


Fig. 13

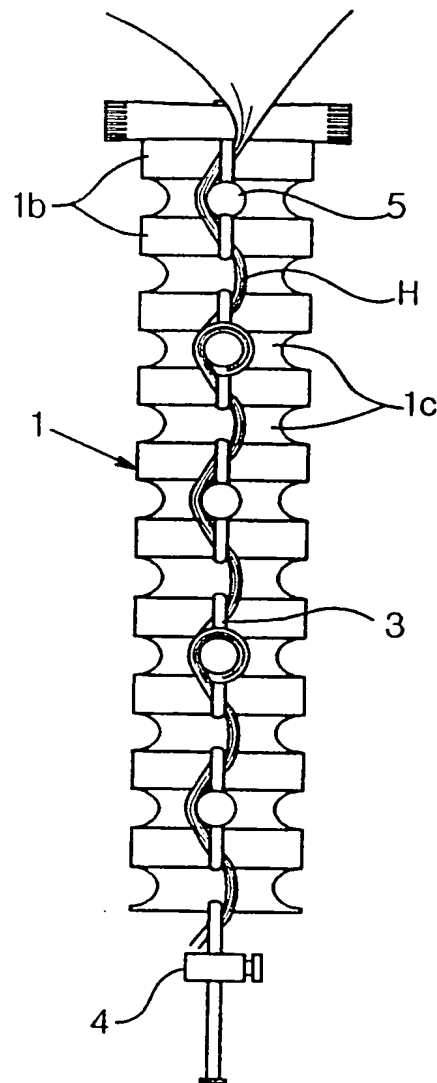


Fig. 14

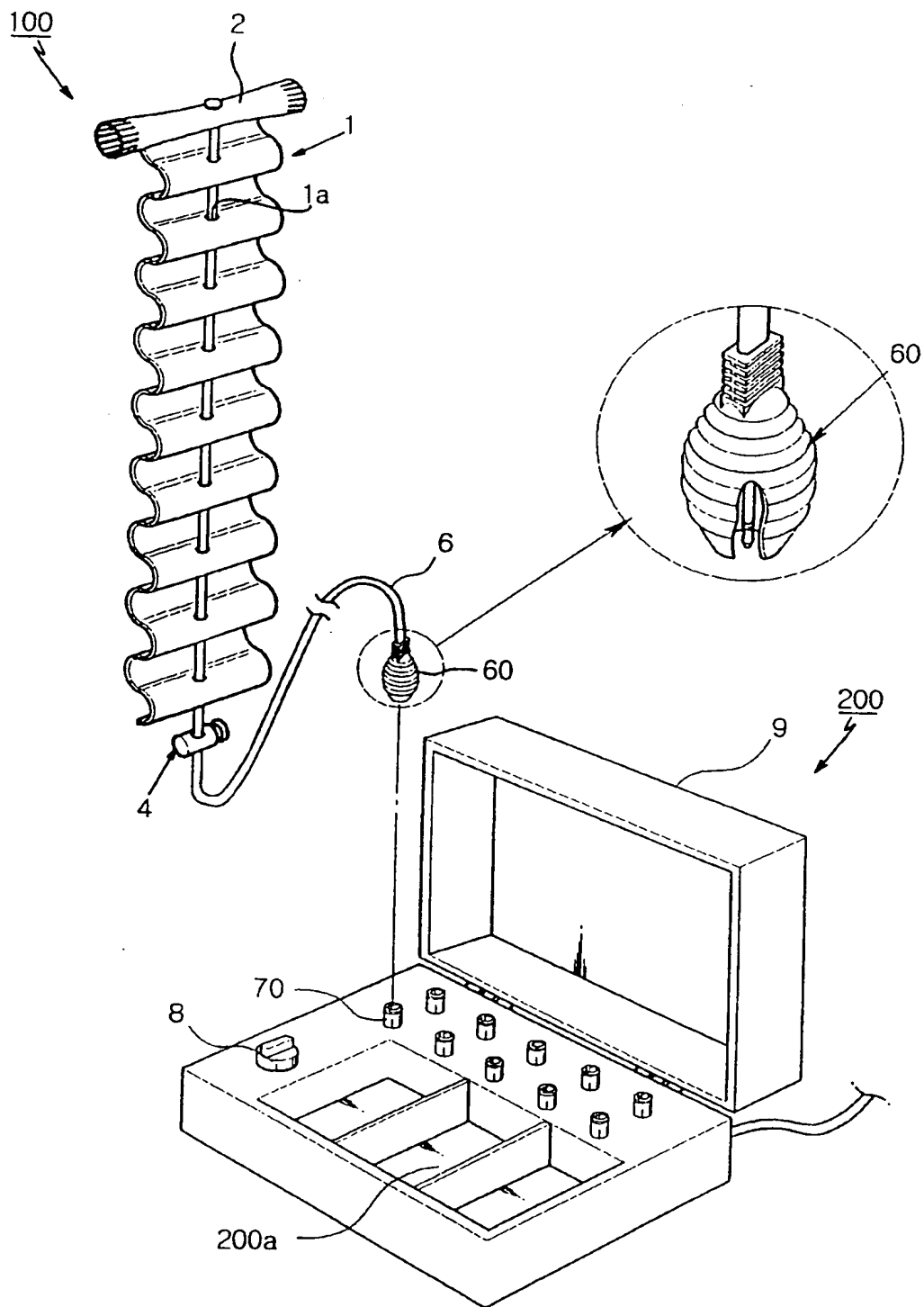
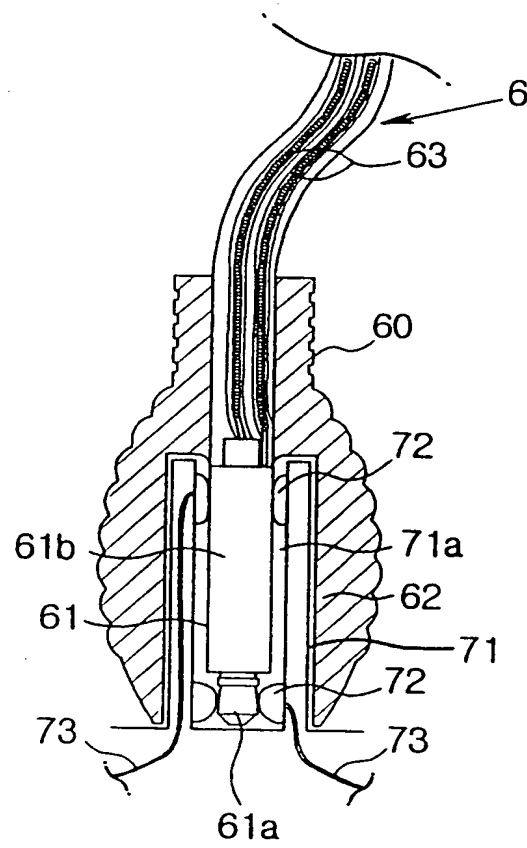


Fig. 15



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 00/00193

CLASSIFICATION OF SUBJECT MATTER

IPC⁷: A 45 D 2/14; A 45 D 2/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: A 45 D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| A | US 4739776 A (PRIJIC) 26 April 1988 (26.04.88) fig. | 1 |
| A | JP 9023920 A (KYUSHI HITACHI MAXELL LTD.) 28 January 1997 (28.01.97) fig. | 6 |
| | ---- | |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

26 April 2000 (26.04.2000)

Date of mailing of the international search report

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Name and mailing address of the ISA/AT

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Pirker

Telephone No. 1/53424/322

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 00/00193

| Patent document cited in search report | | | Publication date | Patent family member(s) | Publication date |
|---|----|---------|---------------------|----------------------------|---------------------|
| US | A | 4739776 | 26-04-1988 | none | |
| JP | A2 | 9023920 | 28-01-1997 | none | |

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